Evan Rixom

SAT5424: Pop Health Info

2/18/25

**Course Project Research Preparation**

1. **Names of Individual or Group Members (1 point)** Evan Rixom
2. **Emerging area you plan to focus on (1 point)** Environmental Data in Health
3. **Tentative title of the research project (1 point)** Leveraging Air Quality Data and Health Informatics to Mitigate Asthma Symptoms
4. **Population(s) you plan on targeting for your research project (2 points)** Those affected by Upper Respiratory diseases like COPD, Asthma, etc.
5. **Tentative abstract (3 points)**

Respiratory conditions (such as Asthma and COPD), often worsen depending on the air quality and current air pollutant levels. Using air quality data in conjunction with patient health records and inhaler usage data could be used to identify and preempt asthma symptoms caused by poor air quality. Challenges include the location-specific accuracy of traditional air quality monitoring and time delay. Future work could include advance machine learning models to take into effect these variables and past symptoms on a patient.

1. **Citations of three relevant peer-reviewed papers (e.g. journals, conference proceedings) to your chosen topic. (2 points)**

Lee, S., Hyun, C., & Lee, M. (2023). Machine Learning Big Data Analysis of the Impact of Air Pollutants on Rhinitis-Related Hospital Visits. Toxics, 11(8), 719. <https://doi.org/10.3390/toxics11080719>

A.M. Williams, D.J. Phaneuf, M.A. Barrett, & J.G. Su, Short-term impact of PM2.5 on contemporaneous asthma medication use: Behavior and the value of pollution reductions, Proc. Natl. Acad. Sci. U.S.A. 116 (12) 5246-5253, https://doi.org/10.1073/pnas.1805647115 (2019).

Park, Y., Lee, C., & Jung, J. Y. (2022). Digital Healthcare for Airway Diseases from Personal Environmental Exposure. *Yonsei medical journal*, *63*(Suppl), S1–S13. https://doi.org/10.3349/ymj.2022.63.S1

1. **For my own future reference:** https://propellerhealth.com/research/